

bringing the multiplicity of yarns together so as to be touching using a shaping and centering device including a roller in a shape of a hyperboloid, while maintaining the sheet at a temperature at which the thermoplastic is malleable, so as to obtain a tape having transverse continuity; and

cooling the tape in order to consolidate the multiplicity of yarns by freezing the thermoplastic.

REMARKS

Favorable reconsideration of this application as presently amended is respectfully requested.

Claims 1-6 and 20-26 are presently active in this case, Claims 1 and 20 having been amended by way of the present Amendment.

Claims 20-26 were rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Specifically, the phrase "cooling ... by freezing the thermoplastic to form the composite tape" is rejected. The Applicants respectfully traverse this rejection, and submit that the Examiner is misinterpreting the claim language. The claim has been amended to remove the misinterpreted phrase. The Applicants submit that Claim 20 is fully supported by the disclosure in the specification of the present application. Accordingly, the Applicants respectfully request the withdrawal of the rejection under 35 U.S.C. 112, first paragraph.

Claims 1-6 and 20-26 were rejected under 35 U.S.C. 103(a) as being unpatentable over Loubinoux et al. (U.S. Patent No. 6,294,036) in view of Angell, Jr. et al. (U.S. Patent No. 5,037,284). For the reasons discussed below, the Applicant traverses the obviousness

rejection.

The basic requirements for establishing a *prima facie* case of obviousness as set forth in MPEP 2143 include (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings, (2) there must be a reasonable expectation of success, and (3) the reference (or references when combined) must teach or suggest all of the claim limitations.

The Applicant submits that a *prima facie* case of obviousness cannot be established in the present case based upon the presently cited reference, because the references do not teach or suggest all of the claim limitations. For example, the cited references do not teach or suggest a process for manufacturing a composite tape characterized in that a sheet is introduced into a shaping and centring device including a roller in a shape of a hyperboloid, while maintaining the sheet at a temperature at which the thermoplastic is malleable, so as to obtain a tape formed by bringing the yarns together so as to be touching, thereby creating transverse continuity, as recited in Claim 1. Furthermore, the cited references do not teach or suggest a process for manufacturing a composite tape comprising the step of bringing a multiplicity of yarns together so as to be touching using a shaping and centering device including a roller in a shape of a hyperboloid, while maintaining the sheet at a temperature at which the thermoplastic is malleable, so as to obtain a tape having transverse continuity, as recited in Claim 20. Accordingly, the Applicants request the withdrawal of the obviousness rejection.

The Loubinoux et al. reference describes a method and device for making composite sheets. The Loubinoux et al. reference is directed to a process that manufactures a composite sheet from numerous plies of yarn. Each individual ply is a sheet of many yarns. (See column 2, lines 10-63.) The Official Action cites to column 2, lines 63-66, and column 3,

line 66, through column 4, line 28, of the Loubinoux et al. reference for the teaching of a shaping and centering device. The cited portion of the Loubinoux et al. reference describes a heated rotating bar that is preferably cylindrical or approximately cylindrical. (Column 4, lines 34-36.) Accordingly, the Applicants submit that the Loubinoux et al. reference does not disclose a shaping and centering device including a roller in a shape of a hyperboloid, as recited in Claims 1 and 20 of the present application.

The Applicants submit that the cylindrical heating and rotating bar of the Loubinoux et al. reference cannot center the sheet in the manner recited in Claims 1 and 20 of the present application. By way of illustration and not limitation, the present application describes an embodiment that includes a shaping and centering device (100) that includes a cylindrical lower roller (101) and a hyperboloidal upper roller (102). The device (100) concentrates the sheet around the central axis of the line in order to reduce its width, and re-centers the sheet with respect to the central axis of the manufacturing line in order to suitably guide the tape downstream towards the calender (110). The Loubinoux et al. reference does not describe or suggest a structure that includes a roller in a shape of a hyperboloid and centers the sheet in the manner recited in Claims 1 and 20 of the present application.

The Angell, Jr. et al. reference is cited for the teaching of an impregnation station. The Angell, Jr. et al. reference does not supplement the deficiencies in the teachings of the Loubinoux et al. reference discussed above.

Accordingly, the Applicants submit that Claims 1 and 20 are distinguishable over the cited references.

Claims 2-6 are considered allowable for the reasons advanced for Claim 1 from which they depend. These claims are further considered allowable as they recite other features of the invention that are neither disclosed, taught, nor suggested by the applied references when those features are considered within the context of Claim 1.

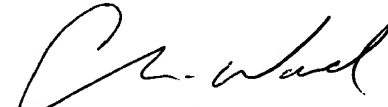
Claims 21-26 are considered allowable for the reasons advanced for Claim 20 from which they depend. These claims are further considered allowable as they recite other features of the invention that are neither disclosed, taught, nor suggested by the applied references when those features are considered within the context of Claim 20.

Accordingly, the Applicants respectfully request the withdrawal of the obviousness rejections.

Consequently, in view of the above discussion, it is respectfully submitted that the present application is in condition for formal allowance and an early and favorable reconsideration of this application is therefore requested.

Respectfully submitted,

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IN THE CLAIMS

1. (Three Times Amended) Process for manufacturing a composite tape based on reinforcing fibres and on a thermoplastic organic material, consisting in bringing together and in consolidating a multiplicity of continuous yarns, characterized in that:

yarns based on thermoplastic and reinforcing fibres are entrained and brought together in a parallel manner in the form of a sheet;

said sheet is made to enter a zone in which the sheet is heated to a temperature reaching at least the melting point of the thermoplastic without reaching the softening temperature of the reinforcing fibres;

the sheet is made to pass through a rotating impregnation device, while maintaining the sheet at a temperature at which the thermoplastic is malleable, in order to distribute the molten thermoplastic uniformly and guarantee that the reinforcing fibres are completely impregnated by the latter;

the sheet is introduced into a shaping and centring device including a roller in a shape of a hyperboloid, while maintaining the sheet at a temperature at which the thermoplastic is malleable, so as to obtain a tape formed by bringing the yarns together so as to be touching, thereby creating transverse continuity;

the tape is cooled in order to consolidate the yarns by freezing the thermoplastic and dimensional characteristics of the tape and appearance of the tape are set in order to deliver said composite tape.

20. (Once Amended) A process for manufacturing a composite tape, said process comprising the steps of:

entraining and bringing together a multiplicity of yarns based on thermoplastic organic material and reinforcing fibres in a parallel manner to form a sheet;

heating the sheet by entering the sheet into a heating zone in which the sheet is heated to a temperature of at least a melting point temperature of the thermoplastic and less than a softening temperature of the reinforcing fibres;

passing the sheet through a rotating impregnation device, while maintaining the sheet at a temperature at which the thermoplastic is malleable, so as to ensure that molten thermoplastic is distributed uniformly and guarantee that the reinforcing fibres are completely impregnated by the molten thermoplastic;

bringing the multiplicity of yarns together so as to be touching using a shaping and centering device including a roller in a shape of a hyperboloid, while maintaining the sheet at a temperature at which the thermoplastic is malleable, so as to obtain a tape having transverse continuity; and

cooling the tape in order to consolidate the multiplicity of yarns by freezing the thermoplastic [to form the composite tape].